

WHAT IS CLAIMED IS

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1. An optical writing unit, comprising:

a light emitting device array that further  
comprises a plurality of light emitting device array  
chips, each of which comprises a plurality of light  
10 emitting devices that are arranged at a  
predetermined interval P, and

an image forming device array that further  
comprises image forming devices,

wherein light volume of the light emitting  
15 devices is set up such that a predefined property  
value concerning an exposure intensity distribution  
of each of the light emitting devices falls within a  
predetermined range, the predetermined range being  
defined for an effective image area in its entirety,  
20 and the light volume of the light emitting devices  
that are located on and near an edge of the light  
emitting device array chip can be set differently  
from other light emitting devices.

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2. The optical writing unit as claimed in  
claim 1, further comprising operating process means  
5 for setting up the light volume for each of the  
light emitting devices to irradiate, wherein each of  
the light emitting devices is driven based on the  
light volume set up by the operating process means.

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3. The optical writing unit as claimed in  
claim 2, wherein the operating process means are  
15 arranged for acquiring a correlation between the  
light volume and the property value for each of the  
light emitting devices, based on a result of  
measuring the property value corresponding to the  
light volume.

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4. The optical writing unit as claimed in  
25 claim 2, wherein the operating process means are

arranged for acquiring the range of the property value that the light emitting device should take, based on the property values of the light volumes of a plurality of the preceding light emitting devices.

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5. The optical writing unit as claimed in claim 2, wherein the operating process means are arranged for determining the light volume of each of the light emitting devices using a compensation value for a driving current.

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6. The optical writing unit as claimed in claim 1, wherein the light volume of the light emitting devices that are located on and near an edge of the light emitting device array chip can be set differently from the other light emitting devices.

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7. The optical writing unit as claimed in claim 1, wherein the light volume of the light emitting devices that are located on and near the edge of the light emitting device array chips is set up in the case that an interval  $P_a$  between one of the light emitting devices on the edge of one of the light emitting device array chips and another one of the light emitting devices on the edge of an adjacent one of the light emitting device array chips is different from the predetermined interval  $P$  by more than 10%, namely, in the cases of  $P_a > 1.1P$  and  $P_a < 0.9P$ .

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8. The optical writing unit as claimed in claim 1, wherein the property values of more than  $M/2$  of the light emitting devices that are located on and near the edge of each of the light emitting device array chips are measured, when the property values of a total of  $M$  of the light emitting devices are measured.

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9. An image forming apparatus for forming  
5 an image, comprising an exposure unit that further  
comprises an image forming device array and a light  
emitting device array that further comprises a  
plurality of light emitting device array chips, each  
of which comprises a plurality of light emitting  
10 devices, wherein light volume of the light emitting  
devices is set up such that a predefined property  
value concerning an exposure intensity distribution  
of each of the light emitting devices, which  
correspond to an effective image area in its  
15 entirety, falls within a predetermined range, and  
the light volume of the light emitting devices that  
are located on and near an edge of the light  
emitting device array chip can be set differently  
from the other light emitting devices.

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10. A driving method of an optical writing  
25 unit that comprises an image forming device array

and a light emitting device array that further  
comprises a plurality of light emitting device array  
chips, each of which comprises a plurality of light  
emitting devices, wherein light volume of the light  
5 emitting devices is set up such that a predefined  
property value concerning an exposure intensity  
distribution of each of the light emitting devices,  
which correspond to an effective image area in its  
entirety, falls within a predetermined range, and  
10 the light volume of the light emitting devices that  
are located on and near an edge of the light  
emitting device array chip can be set near a limit  
of the predetermined range.

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11. An optical writing unit, comprising:  
a light emitting device array that  
20 comprises a plurality of light emitting device array  
chips, each of which comprises a plurality of light  
emitting devices that are arranged at a  
predetermined interval  $P$ , and  
an image forming device array that further  
25 comprises image forming devices,

wherein light volume of the light emitting devices is set up such that gradient of an approximated regression line for exposure areas corresponding to a plurality of the light emitting devices that are selected at a predefined cycle falls within a predetermined range, the predetermined range being defined for an effective image area in its entirety, and the light volume of the light emitting devices that are located on and near an edge of the light emitting device array chips are set up such that said gradient corresponds to an interval  $P_a$  between the light emitting device on the edge of one of the light emitting device array chips and the light emitting device on the edge of an adjacent one of the light emitting device array chips.

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12. The optical writing unit as claimed in claim 11, wherein the predefined cycle is a constant throughout the light emitting device array.

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13. The optical writing unit as claimed in claim 12, wherein one cycle of the predefined  
5 constant cycle comprises  $M+N$  of the light emitting devices, where  $M$  represents the number of the light emitting devices that are selected,  $N$  represents the number of the light emitting devices that are not selected, and  $M$  is equal to or less than  $N$ .

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14. The optical writing unit as claimed in claim 11, wherein the interval of the light emitting  
15 devices is set equal to  $1/10$  or less than  $1/10$  of the interval of the image forming devices.

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15. The optical writing unit as claimed in claim 11, wherein the approximated regression line  
of the exposure areas corresponding to the plurality  
25 of light emitting devices is obtained from a



plurality of the light emitting devices that are located within a range between LK and 3LK, where LK represents the interval of the image forming devices.

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16. The optical writing unit as claimed in claim 11, wherein intervals between the light emitting device on the edge of one of the light emitting device array chips and the light emitting device on the edge of an adjacent one of the light emitting device array chips, are categorized into a plurality of ranks based on the magnitude of the intervals, and the light volume of each of the light emitting devices is set up according to said ranks.

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17. The optical writing unit as claimed in claim 16, wherein said ranks comprise three ranks, namely,  $Pa < PL$ ,  $PL \leq Pa \leq PH$ , and  $PH < Pa$ , where Pa represents the interval between the light emitting device on the edge of one of the light emitting

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device array chips and the light emitting device on  
the edge of an adjacent one of the light emitting  
device array chips, and PL and PH represent  
predetermined threshold levels of the interval,  
5 where  $PL < PH$ .

10 18. The optical writing unit as claimed in  
claim 17, wherein the light volume is increased  
where  $P_a > PH$ , and the light volume is decreased where  
 $P_a < PL$ .

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19. The optical writing unit as claimed in  
20 claim 17, wherein PL is set at  $0.9P$ , and PH is set  
at  $1.1P$ , where P represents the predetermined  
interval of the light emitting devices.

25 20. The optical writing unit as claimed in

claim 11, wherein the light emitting devices that  
are located on and near an edge of the light  
emitting device array chip are the light emitting  
devices that correspond to a range of distances  
5 between 0.5LK and 1.5LK, where LK represents the  
interval of the image forming devices.

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21. An image forming apparatus for forming  
an image, comprising an exposure unit that further  
comprises an image forming device array and a light  
emitting device array, comprising a plurality of  
15 light emitting device array chips, each of which  
comprises a plurality of light emitting devices  
arranged at a predetermined interval, wherein the  
light volume of each of the light emitting devices  
is set up such that the gradient of an approximated  
20 regression line of exposure areas corresponding to a  
plurality of the light emitting devices that are  
selected based on a predetermined cycle falls within  
a predetermined range for an effective image domain  
in its entirety, and the light volume of each of the  
25 light emitting devices on and near the edge of the

light emitting device array chip is set up such that  
said gradient corresponds to an interval between the  
light emitting device on the edge of one of the  
light emitting device array chips and the light  
5 emitting device on the edge of an adjacent one of  
the light emitting device array chips.

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22. A driving method for driving an  
optical writing unit comprising an exposure unit  
that further comprises an image forming device array  
and a light emitting device array, comprising a  
15 plurality of light emitting device array chips, each  
of which comprises a plurality of light emitting  
devices arranged at a predetermined interval,  
wherein the light volume of each of the light  
emitting devices is set up such that the gradient of  
20 an approximated regression line of exposure areas  
corresponding to a plurality of the light emitting  
devices that are selected based on a predetermined  
cycle falls within a predetermined range for an  
effective image domain in its entirety, and the  
25 light volume of each of the light emitting devices

on and near the edge of the light emitting device  
array chip is set up such that said gradient  
corresponds to an interval between the light  
emitting device on the edge of one of the light  
5 emitting device array chips and the light emitting  
device on the edge of an adjacent one of the light  
emitting device array chips.